What is cogongrass and how worried should we be?

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Insects, Diseases, and Invasive Plants

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What is cogongrass?

Imperata cylindrica

- **Family**: Poaceae, **Tribe**: Andropogoneae
- Warm-season (C4), rhizomatous grass
- Multiple introductions from East Asia in US
- Five recognized varieties worldwide
- One of the world's *most noxious* weeds
- Closely related to Johnsongrass (*Sorghum halepense*) and many other highly invasive grasses in the South

(Hubbard et al. 1944, Holm et al. 1977)

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Ervin 2005

- Prolific Seed Producer (>1000/inflorescence)
- Rhizomatous

- Obligate Outcrosser
- Wind Pollinated and Dispersed

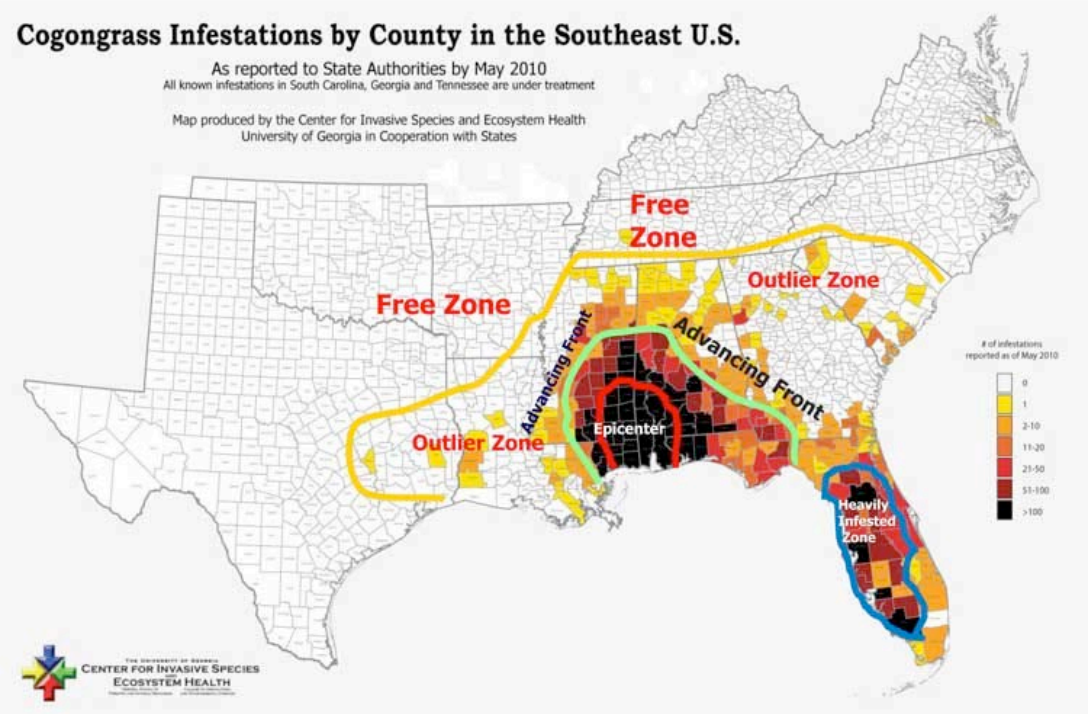
- Individual tiller with cylindrical culm
- Can be both glaborous and pubescent
- Off-center mid-rib

All images through Forestry Images (Bugwood)

- Extensive below-ground network of rhizomes
- Scaled-rhizomes
- Piercing tips
- Can extend 4-6’ in a single growing season
- Pierces through its own rhizomes and roots as well as other plant species

- Will allocate most resources to rhizomes after treatment or disturbance to
  - Perenniate
  - Swiftly regrow leaf tissue

Where is it and how bad is it?



- Alters forest succession
- Highly flammable
- Native species displacement
- Reduction in habitat availability
- Resource competition:
  Light, water, nutrients
- Alters community composition (monotypic)
- Resilient: Difficult to kill or remove

Introduction

Lucardi 2009

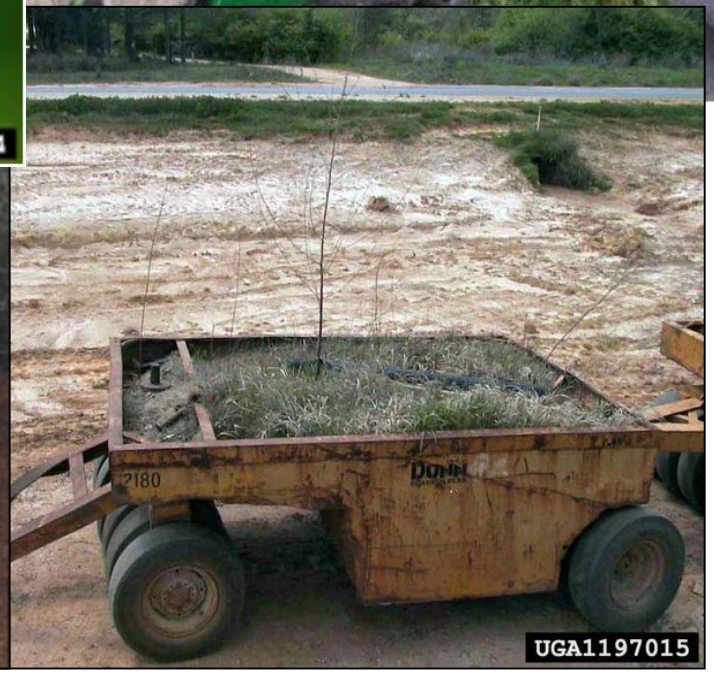
Disturbance (Fire)

Bryson, Forestry Images

Timber Loss

Ervin 2005

Dispersal



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Red Baron: The horticultural cultivar

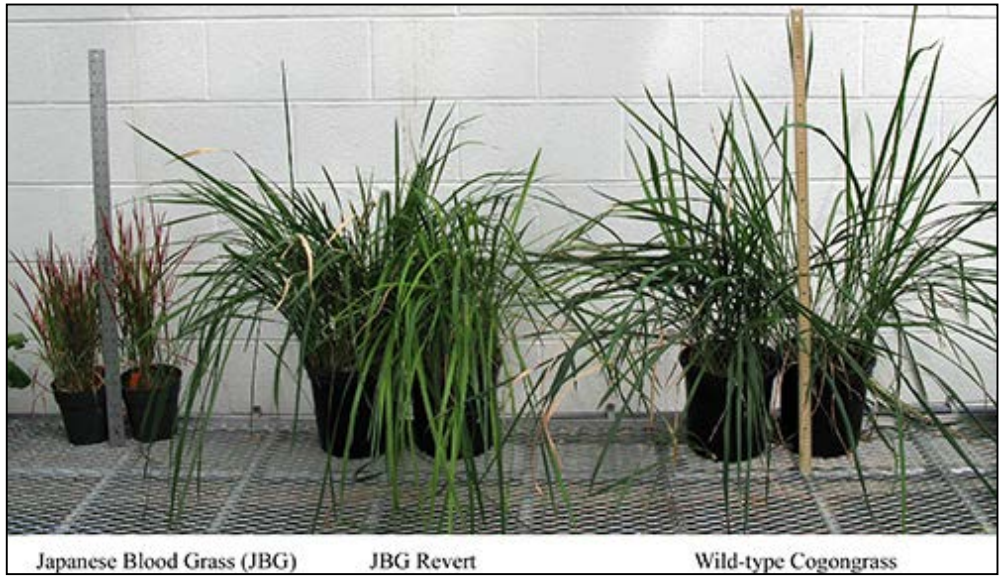
Lucardi 2015; Lexington, KY

- Red Baron (*var. konegii* or *rubra*)
- a.k.a. Japanese Blood Grass
- Horticultural cultivar
- Presumably developed in Japan
- Popular garden plant
- Persists in cold climates (e.g., MI, OR, MD, ID, KY)
- Still sold commercially in the US

The Red Baron Problem

- Persists in cooler climes with longer freezing period(s)
- A robust, commercial planting desired by gardeners and enthusiasts
- Both male and female flowers on a single inflorescence leading to pollen exchange
- A developed variety and flowers are supposedly sterile
- Sales regulated by State Plant Industry departments and APHIS-PPQ

The Red Baron Problem: Reversion & Hybridization



Reversion under common-garden GH conditions (Cseke & Talley 2012)

Hybridization: pollen from Red Baron fertilized flowers on a wild-type invasive accession, generating F1-hybrid offspring from seed. (MacDonald and Lucardi, *in prep*)

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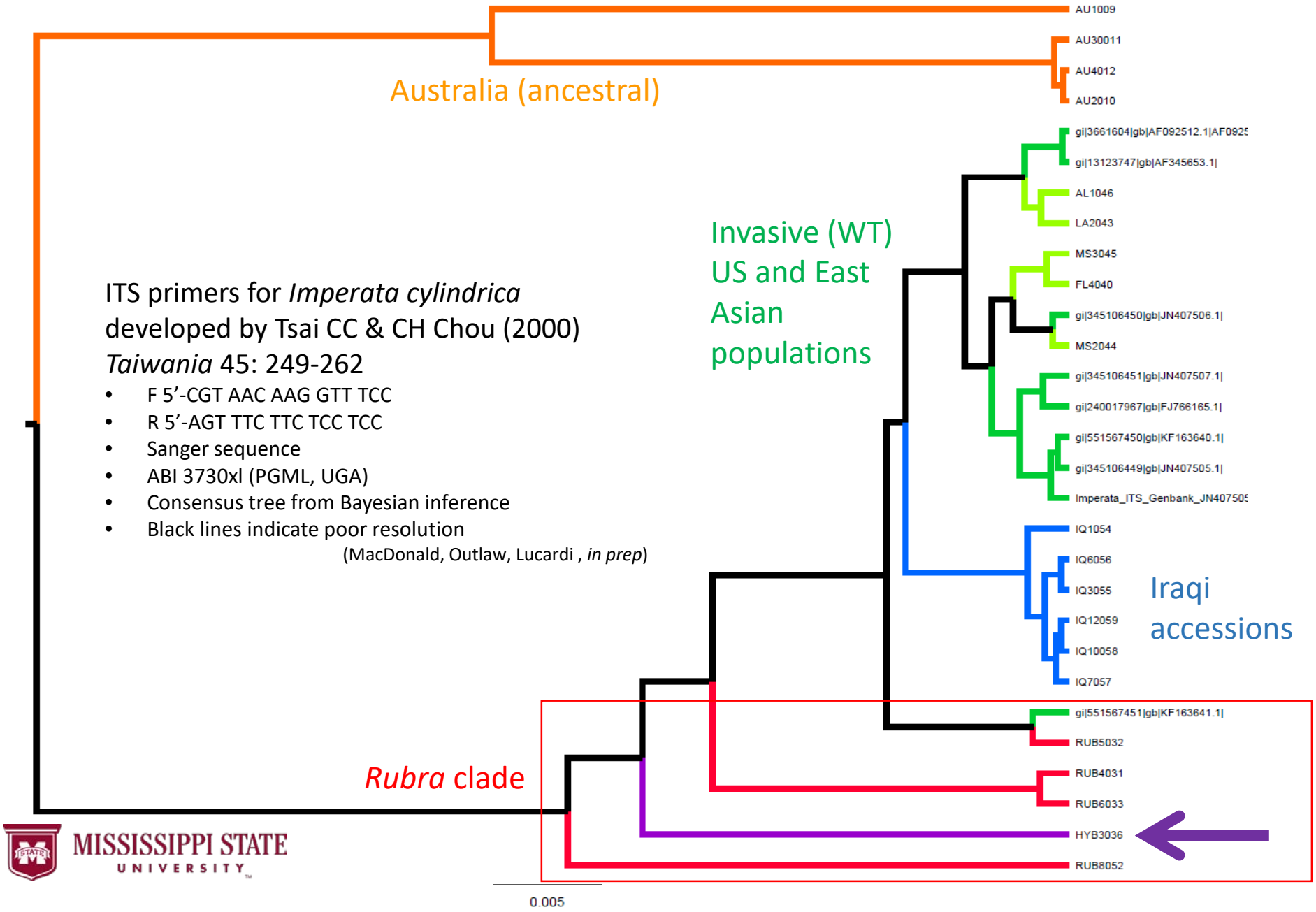
ITS primers for *Imperata cylindrica* developed by Tsai CC & CH Chou (2000) *Taiwania* 45: 249-262

- F 5'-CGT AAC AAG GTT TCC
- R 5'-AGT TTC TTC TCC TCC
- Sanger sequence
- ABI 3730xl (PGML, UGA)
- Consensus tree from Bayesian inference
- Black lines indicate poor resolution

(MacDonald, Outlaw, Lucardi , *in prep*)



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What should I look for?

R Lucardi

Current Invasive Cogongrass R_x

- Developed for highly infested states
- The standard for FL, GA, AL, and MS
- Do NOT burn without consultation on infestation

- Glyphosate (i.e., RoundUp WeatherMAX®, etc.)
  - Apply at label (3-4 pounds a.i. per acre)
- Imazapyr (i.e, Arsenal®, Chopper®, etc.)
  - Soil- and foliar-active
  - Collateral damage (desirable hardwood mortality)
  - Apply at label (for cover-type)
- Carefully review treatment plans for riparian areas

- Recommended treatment frequency:
- 1x in early growing season prior to flower
- (**OPTIONAL**) 1x again upon regrowth from incomplete rhizome-kill
- Monitor 2x per year (and anticipate reapplication) for at least 3 years for any regrowth and infestation
  - Include extent and size of infestation in monitoring
  - Recommended: Deposit voucher(s) of new infestations prior to treatment at a university herbarium

Resources: (1) https://www.cogongrass.org/control/ (2) http://www.gatrees.org/forest-management/forest-health/cogongrass/GFCCogongrassEradicationStrategiesrevMarch2010.pdf (handout)

Need help? Contact us!

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